

FOSSILS OF TWO MILLION YEARS AGO UNCOVERED

Ancestors of the Elephant and the Horse Found by the Amherst Expedition in Patagonia.

The class of 1906 of Amherst College on the occasion of its fifteenth reunion last June determined to send an expedition to Patagonia to collect the petrified bones of extinct animals and to study the geology of the country. This expedition was composed of the writer, W. Shumway of the class of 1911, P. L. Turner of the class of 1912 and William Stein of St. Joe, Wyo., as cook and horsehandler.

Immediately after the reunion, on July 3, the party, provided with a wagon, harness, tent, etc., sailed from New York direct for Buenos Ayres. Nine days were lost in Buenos Ayres waiting for some boat going to the south, but on August 1 the party got away on the Presidente Quintana, which between loading and unloading at ports and bad weather took nine days to go the 720 miles to Port Madryn, where we expected to get horses and make a start.

Fate smiled differently. The horses were scarce and too small for our wagon, so all our stuff was put on a flat car of the short narrow gauge railroad and carried forty miles to Trelew, the centre of the Welsh colony on the Chubut River. However, at Port Madryn there was an old Indian camp site where a fair series of arrowheads, knives, bone balls, anvils and hammer stones were collected. The hammer stones were different from those of North America in that they were rounded beach pebbles with a pit on one side for the thumb and two or three pits on the other side for the fingers to grip. No hammer heads grooved for handles are found in the Chubut region.

The bluffs back of Port Madryn also yielded a good collection of various fossil shells, principally different species of extinct oysters, and one in particular of gigantic size, the shells being over a foot in diameter and from two to three inches thick. These occurred here in great numbers and all along for 500 miles to the south made the most characteristic means of determining the geological horizon of this and adjacent layers of rock.

Patagonia includes the four southern territories of the Argentine Republic, extending from the Straits of Magellan nearly 1,000 miles to the northward. Either right at the coast or from one to twenty miles inland the land rises in a great step or escarpment to a level some 800 or 1,000 feet above sea level, then extends as a great flat, known as the pampa, inland to the Cordillera Mountains, that are distant on the north over 250 miles, and on the south about 100 miles.

This plain, like all the country east of the mountains, is absolutely treeless, but covered with a variety of bushes, some larger, some smaller, but all thorny in the extreme. The great coastal escarpment and similar ones made by the few rivers cutting through the pampa offer the opportunity to study the geological structures of the country and to find the fossils buried in the sediments of which most of that whole region is built. It was as near to the coastal escarpment, as possible that the expedition kept throughout most of the trip.

At Trelew suitable horses were purchased, provisions bought and the final preparations completed, and on August 29 the wagon was loaded, while a group of citizens, including the Governor of the Territory, stood around and encouraged us by discussing and prophesying as to whether our wagon, with only two horses and three saddle animals, would get entirely stuck within three or four days, and as to whether our horses would die before we reached the first stage of the journey. Horses are comparatively cheap in Chubut and the custom of the country in making a journey with a load is to take a troop of horses, from three to six being hitched in at a time, and a horse used only once in three or four days, the spare animals picking up their living in the meantime. This, however, involves many delays on account of horses wandering away at night, etc. We had faith in the North American way of handling horses and entered the wilderness.

When two days out a big cold rain set in and made the roads impassable for five days. After two days of progress a second rain set in for four days more. This was a surprise in that arid country, where the rainfall is less than 10 inches a year, usually much less, but it was all the rain experienced in the four months of travel to travel in a way was a great help, for it filled all the face pools of water, and solved the problem of finding water on which to camp.

There seemed to be about six varieties,

one resembling, in texture of the wood, a beech; two or three that of pines, and a couple resembling palms. The different kinds were collected and a number of the showiest pieces brought back, but the great weight of the large sections of tree trunks prevented bringing as much of this wood as was desired.

During the stay here the first mail was received by the party, since leaving America, three months and more before, and to get it a special trip of fifty miles and back was made down to Comodoro Rivadavia. Post offices with anything like a regular service were very far apart. There were some offices about every fifty miles along the telegraph line, but mail was brought to and taken from such offices only when some one was going to a coast town, and this was often at intervals of months.

While near Port Visser reports were

one resembling, in texture of the wood, a beech; two or three that of pines, and a couple resembling palms. The different kinds were collected and a number of the showiest pieces brought back, but the great weight of the large sections of tree trunks prevented bringing as much of this wood as was desired.

During the stay here the first mail was received by the party, since leaving America, three months and more before, and to get it a special trip of fifty miles and back was made down to Comodoro Rivadavia. Post offices with anything like a regular service were very far apart. There were some offices about every fifty miles along the telegraph line, but mail was brought to and taken from such offices only when some one was going to a coast town, and this was often at intervals of months.

While near Port Visser reports were

BY PROF. F. B. LOOMIS
of Amherst College.

on the surface of the side of the hill would be the lead and following this upward one always hopes to find the end of the bone from which the fragments were weathered. When found it is the prospect which is then carefully uncovered to see how extensive the find is.

Bones before being buried were pretty well scattered, as in all probability the carcasses were pulled to pieces by the carnivora of that time, so it is only very seldom that a prospect develops into a complete skeleton. The bones were usually without any infiltrated filling of lime or quartz which usually occurs, so that while intact, as when buried, they were fragile and soft and had suffered more or less from weathering.

horses were two or three miles away every night and morning.

Then for two weeks it was a constant finding and taking out of specimens from sunup (about 4:45 o'clock) till sunset; until all the cloth for bandages, including much of our clothing; all the flour for paste, including what we could beg or borrow from the nearby ranches, and many of our provisions were exhausted. Then a trip had to be made to Port Visser to get the needed supplies and to carry in about 1,000 pounds of fossils. While the team was away the other three horses wandered off, and it cost the rest of the party two days searching to find them, but incidentally, during the hunt, they got a guanaco, four armadillos, an ostrich egg and a nest of partridge eggs.

On the return a day was set to close up this phase of the work, but just before leaving Shumway found a small prospect,

A Fossil Forest Another Discovery—Many Specimens of Early Animals Brought Back.

dred jaws, together with a large quantity of miscellaneous limb bones, etc. The animals range from tiny rodents, as small as mice, up to the big skull about two-thirds the size of our modern elephants. There are early monkeys, armadillos, birds, carnivores and a large number of extinct types, especially herbivorous animals, with broad grinding teeth in the back of the jaw and curved, almost rodentlike, biting teeth in front.

of dry grass, on which were the remains of the skeleton of a very young, probably newly born child. Thus the grave proved to be that of a mother and child buried in a previous and much earlier grave. This is unusual, but no other interpretation seems to fit the findings.

On the top of this hill also the marine beds were well exposed, and it soon appeared that in addition to the big oyster shells there were numerous tiny shells and also a large number of sharks' teeth of several varieties. By going over the top of the hill on hands and knees two or three hundred of these teeth were found and also remains of a dolphin, besides a good set of smaller shells.

Finally after a month the party, pressed for time, left this rich hill, though its treasures are by no means exhausted, and went back to Port Visser, spending two days there packing up the collections. Lumber is very hard to get in Patagonia, but fortunately for us bottled goods are shipped there in large quantities, and the boxes, with the straw around the bottles furnished excellent packing material.

Then we proceeded to Comodoro Rivadavia, the busiest town on the coast, by way of the coast route. The regular road, if so it may be called, goes a day's journey back from the coast, then two days south and a fourth day back to the coast. By going along the beach at low tide two days may be saved, but the beach is all loose shingle and very hard for a wagon, too much for our five horses, so four mules were hired and hitched on in front of our team. Even then in places it was all the nine animals could do to pull the wagon through.

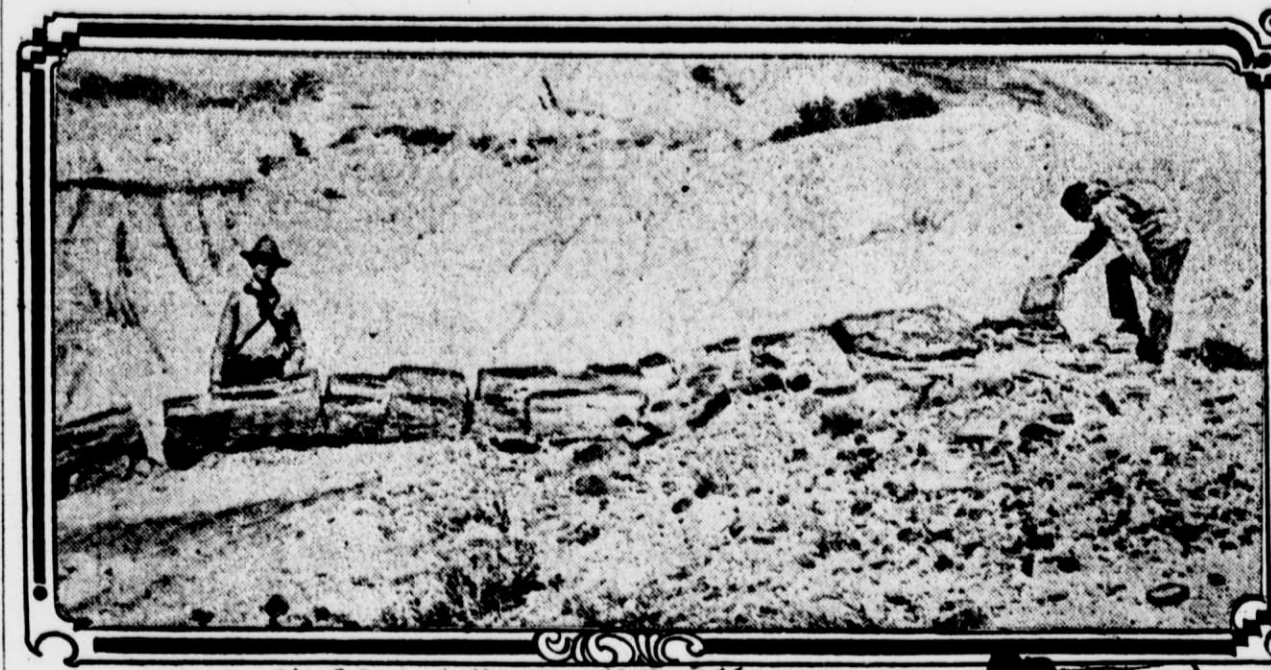
However, with much shouting by our Boer mule driver the beach was passed during one low tide, and we camped the night at Solano Bay, expecting an easy drive in the next forenoon. However, when the horses were sought the next morning they had disappeared.

After a couple of hours of futile searching in all places where they would naturally wander, a start was made systematically to trace them down. This would ordinarily have been easy. The trail was found so fresh as to seem as if they should be in sight, but it soon led to a much travelled road, where it was obscured by the tracks of many animals. On this it continued nearly two miles, and here it was difficult to follow. Then it struck off across four miles or more, over an absolutely barren plain, on which were detected the tracks of a sixth and strange horse. Of course horses left to themselves do not go off on strange roads nor wander on great barren. The five, all tired out, were finally found in a tiny ravine surrounded by steep hill sides and perpendicular sided gullies. The sixth horse was not there.

In Patagonia it is not practicable to steal horses, for they cannot be sold, as every transfer of an animal or its hide must be recorded in the office of a justice of the peace, and ownership has to be proved to permit a sale. But it is not an unknown trick to drive off horses and hide them until a reward is offered to the finder. It was past noon before, after a good feed, we hitched up the horses and started toward Comodoro. The road was good, though very hilly, and the twenty-five miles were made in five hours with the loaded wagon, showing that our horses had got into good condition and were ready to demonstrate what skillful handling would do.

From Comodoro Rivadavia the expedition went on southward to Mazaredo, always prospecting, always travelling. About fifteen miles south of Mazaredo a fine set of marine fossils was gathered, and as it was desirable to see the geology as far as the Desierto River the wagon and two students remained at a large sheep ranch while Loomis and Stein prospected the intervening country on horseback. During this period a goodly quantity of Indian implements were picked up. Finally the party returned to Comodoro Rivadavia.

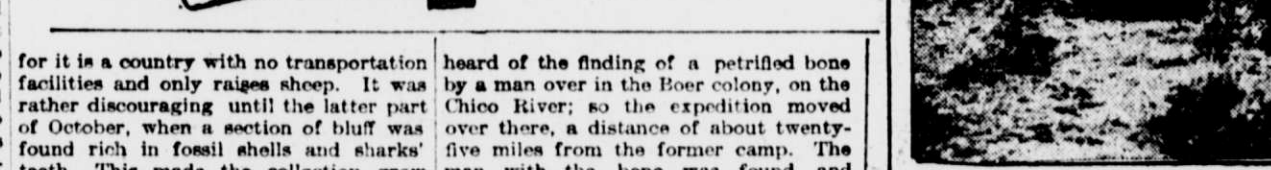
During the last month the wagon had covered some 450 miles, and two of the saddle horses nearly 200 miles. At Comodoro the horses, wagon, harnesses, saddles, etc., were sold. The North American wagon and saddles were in good demand and sold for about their original cost, as did also the horses. In spite of having been worked four months. Here the remaining collections were packed and on December 17 we started home by way of Buenos Ayres and London, reaching New York on February 7.



A Petrified Log in the fossil forest.



Digging out the Elephant-like Skull.



The Outfit pulling up onto the Pampa.

A camp near the fossil wood locality, showing a typical view of the Pampa.

for it is a country with no transportation facilities and only raises sheep. It was rather discouraging until the latter part of October, when a section of bluff was found rich in fossil shells and sharks' teeth. This made the collection grow faster. Then in the breaks of the bluff, without any protection, an ostrich nest was found, merely a depression in the bare ground, with seventeen eggs in it, of which fifteen proved good. It was a heavy load for two men to bring these eggs five miles into camp, each egg being equal to about ten hens' eggs. Each day the contents of one egg were blown out and the shell saved for the museum, the egg being delivered, either scrambled or in Johnny cake or the like. With this the luck of the party seemed to turn and be favorable.

A week later, near Port Visser, an extensive fossil forest was found. For a mile in length and for 200 to 300 feet in width, that is, for the width of the shelf on the bluff where the wood lay, the ground was strewn so thickly with logs up to four feet in diameter and broken fragments that the place looked like an enormous woodyard. This illusion was the more complete as the petrified wood was of the yellow-brown color characteristic of weathered wood.

There seemed to be about six varieties,

heard of the finding of a petrified bone by a man over in the Boer colony, on the Chico River; so the expedition moved over there, a distance of about twenty-five miles from the former camp. The man with the bone was found and told us on which hill he had found it. On arriving at the hill to prospect it but a few minutes were required to show us that at least a rich locality was before us.

It was a hill, or "kopje," as the Boers would have called it, about half a mile long and from 200 to 300 feet wide, constricted at two points almost to breaking through. The material was clay, sand and volcanic ash, now fine, now coarse, irregularly bedded, and richly sprinkled with bones and worn fragments of bones, evidently a section of an old river bottom. The whole was capped by a marine layer with beds of giant oyster shells in such numbers as literally to cover the ground in places.

The fluvial deposits were made on land and seemed to be about 2,000,000 years old. Then the land sank and was covered with the sea bottom deposits to a depth of hundreds of feet. Again the land of this region rose and has since been buried by the wearing of the Chico River, so that these buried fossils are reexposed to-day about 800 feet above sea level. A few small fragments of bone strewn

and it was necessary to harden them before trying to lift them. This is done by saturating them with a thin solution of shellac, followed by a second and third or more if necessary. Next they are bandaged with narrow strips of cloth dipped in flour paste, thus making when dry a firm package which could be worked around and dug out.

Within a day every one had two or three prospects and each man had begun work on a skull. However, for lack of water we were obliged to camp near a house over three miles away from the fossil hill, until one morning Stein found a bare spot where the ground was damp and covered with a white rime of salt like hoar frost. He suspected possibilities, so the next morning the shovel and pick were brought and in a couple of hours a good spring of sweet water was dug out only half a mile from our work. This made an excellent camp except that the

which on development turned out to be the skull and neck of an elephantlike animal. The skull was 35 inches long, with a pair of eight inch tusks in the upper jaws and a second pair nearly as long in the lower jaws. Teeth of this type had been found before, but this is the first complete skull and jaws of this sort of animal, and the species is larger than any yet known.

As if this were contagious, a second smaller skull and another set of teeth were found within the next two days. These seem to be ancestral members of the elephant family, and resemble similar remains from the Eocene beds of the Fayum desert in southern Egypt.

Near the above, remains of what is apparently an early horse, resembling those found in the upper Eocene or North American, were found. In all, that hill yielded four more or less complete skeletons, twenty-four skulls and over a hun-

It was here and while eating lunch one noon that a couple of modern bones attracted attention. They seemed to have fallen from an overhanging ledge above, which we used at noon to shelter us from the perpetual fierce, driving, annoying winds. On investigation a big pile of rocks was found on the edge of the ledge, a typical Indian burial place in that region.

Opening the grave a nearly complete skeleton of an adult was disclosed; but on assembling the skeleton three thigh bones appeared, so all the corners and bottom of the grave were worked through, resulting in the finding of six or seven bones of a second adult. As these appear much older and were in the corners of the grave, it looks as if a still earlier grave had been opened to make the later one and the bones of the first occupant thrown out to make a place for the second dead. In this search there was also found a mat

KANSAS BLIZZARD ALL TO THE GOOD

Thousands of Jackrabbits Destroyed, and as a Consequence the Farmers Are Happy.

"The blizzard has done Kansas no good turn this winter. It has killed off the jackrabbits by thousands," said John Symmerton, who comes from one of the western counties where somebody estimated that the population was about in the proportion of one adult to 20,000 rabbits. "These pecky things are not your little cotton tailed bunnies but big fellows with the appetite of a starving steer."

In the spring, just about the time that the wheat and alfalfa are beginning to sprout and look green, Jack invites his whole family, invariably a large one, into the field to help themselves. When they have finished there isn't a blade of the growing grain left. In winter Jack and his family burrow into the stacks of alfalfa and the farmer never knows what a hollow mockery the fine big pile of forage that he had been preserving for winter feed is until he begins to uncover it and finds that the whole inside has been eaten out.

It used to be the habit to organize hunting parties in the different towns and school districts, divide the crowd into two sides and then see which could kill the more rabbits. The event was a country holiday. Hundreds of people turned out and forming a line of a mile or so in length swept the prairies before them, shouting, yelling and firing shot guns. Then they gathered the kill in wagons that followed.

A Sunday school at Kingman took a day off and bagged 172 rabbits, a team of hunters of a Barton county township

contested with a Great Bend team and killed 462 to the townsmen's 43; and in another contest in Ness county one side killed 900 to their opponents' 700. But this did not seem to make much of an impression; you could kill off a thousand or more and you wouldn't miss them the next day. So the counties of the western part of the State began to offer bounties for rabbit ears or scalps. Some offered three or four cents a scalp, but the general price was five cents and for want of a better name for the work the bounty hunters were called "nickel chasers."

"The cold weather came to the hunters' assistance, for the rabbits on account of the cold and the snow and sleet that covered the prairies were driven in to the ranches and settlers' homes. They perished by hundreds in the snowdrifts. A man could sit at his own back door and pick off rabbits as fast as he wanted to and as long as his ammunition held out. One story that is told is that a nephew of Wild Bill Hickok, who lives out in Grant county, didn't move away from his front door and killed seventy-two rabbits with seventy-three shots.

"Some of the towns on the railroad made a business of shipping rabbits to the East. In Scott county a man went out among the farmers and in addition to the 5 cents bounty offered 10 cents apiece for the rabbits killed. Three Scott City men took a day off and in the evening delivered to the buyer 500 of the long eared tribe. It is said that in all seven carloads of rabbits were shipped out of the county. Hutchinson, which forty

years ago was the headquarters of the buffalo shipping, sent this winter, mostly to Chicago, about 100,000 rabbits.

"The western part of the State could have supplied the whole world with rabbits. But there is a limit to the market's capacity for that kind of meat and apparently no limit this winter to the supply. The County Clerk of Kearny county says that in one hour he received and counted 938 rabbit scalps. In Sheridan county more than 10,000 scalps were received in one week. The estimate is made that in four counties—Finney, Scott, Logan and Trego—20,000 scalps were received in two months and that \$9,000 was paid in bounties.

"In my own county, Trego, the commercial rabbit trade is a new thing. They had spent one whole season allowing vouchers on rabbit ears. There had been presented at the court house just 101,431 pairs of ears and they cost the taxpayers \$5,071.35. One of the clerks at Wakeeney got to figuring on the kill and said it represented twenty-eight rabbits to every quarter section in the county and that if the ears were stretched out in a line they would extend more than nineteen miles.

"While the rabbit family has suffered a great loss it is not exterminated by any means. Jack will be gun shy and wary and will cease to be such a pest as in the past. He is going, though, the way of the buffalo. In another respect this slaughter reminds me of that of the buffalo. When the early settlers first went to western Kansas it was the gathering of the bones of the great herds of these animals that had been left to bleach on the plains that furnished money to tide over some disastrous seasons. This year it is the bounty on the jackrabbits that has helped the farmer over one of the hardest winters that was ever known on the Kansas prairie."

BY ORDER OF THE BABY.

Change That Its Coming Brought About in One Habit of Its Father.

"We've got a new baby up at our house," said young Mr. Grilby. "Get that? A new baby. Grandest thing ever happened, bar nothing. A splendid, remarkable, wonderful boy baby, and we're so proud and happy over it we don't know what to do."

"When the baby first came I used to sit in the library, as my habit was, and smoke and dream over it, thinking of what a grand man it would surely come to be. I was happy beyond description, and it never occurred to me that anything could come to disturb this happy dreaming; but then something happened."

"Last week for the first time they brought the boy out into what was a larger world for it, out into the library and then I discovered that smoke wouldn't do for the baby. I couldn't smoke in the library any more."

"And so thereafter when I wanted to smoke I retired to our spare room. But soon I learned that that is to be the little chap's nursery and it wouldn't do to have any odor of smoke there."

"So from the spare room I migrated to the dining room for my smoking, but smoke came along the hall from the dining room to the library, and that wouldn't do, so then it began to look as if I couldn't smoke in the house at all, and so it finally turned out. Now when I want to smoke I put on my ulster and my arctic overshoes and go out on the fire escape."

"It has been a little chilly out there these last few days, I will admit, but spring is coming and I don't mind the cold anyway; even now I find more joy in smoking out there than I ever did before anywhere, as I think of the wonderful boy."

BANDIT TOOK THE CONDUCTOR'S TEETH

Seemed Better at First to Let Them Go, but the Trainman Repented Afterward.

CUERNAVACA, Mexico, Feb. 15.—Fred Miller, an American passenger conductor who runs on the Cuernavaca division of the National Railways of Mexico, has had many thrilling experiences at the hands of the Zapata bandits who infest nearly every mile of the territory through which run this railroad division, but he went through an ordeal a few days ago in the little town of Balsas, the southern terminus of the road, that surpassed anything that he has so far encountered. When Miller and his crew reached the end of their run on that day they found the town in possession of a band of Zapataistas under command of Jesus Salgado. The freebooters were taking advantage of every opportunity to loot. Miller was at the station, making preparations to start on the return trip with his train, when a party of Indians who belonged to Zapata's command came up to him, the leader demanding that he turn over his money and valuables. Miller is so used to being robbed on these trips that he did not have much in the way of these things to hand to the Indian, but he gave up his watch with good grace, laughingly offering excuses for not having more that he could deliver. When Miller laughed he showed prominently two gold front teeth, which instantly aroused the covetousness of the bandit.

"Ah!" he said, "I see the Americano has lots of gold in his mouth. I will have to kill you and take it."

Mr. Miller knew the Zapataistas well enough to have no doubt that this was not

an idle threat on the part of the Indian. "The señor is welcome to it," he said with becoming graciousness. To the astonishment of the Indian, Miller reached to his mouth and took out his false set of teeth, in which the two gold ones were set, and handed it with a bow to the brigand. It was the first time the lowly Indian had ever seen or probably heard of false teeth, and he viewed the American with undisguised wonder. He, however, accepted the offering and went his way.

Miller began to realize his loss when he commenced to feel the pangs of hunger. His toothless gums were unable to masticate even ordinary food, and when the desperation of the situation fully dawned upon him he decided to risk his life in an effort to get back his teeth. He laid the matter before two of his train crew, and they agreed to accompany him to the headquarters of the Zapata band and make an earnest demand for the return of the artificial masticators. They knew that this was a daring thing to do, but Miller said he would as soon be shot up as starve to death. They went into the mountains a short distance out of town, and there found the camp of Salgado, and met that chief in person. Miller, in his best Spanish, explained to Salgado his plight. Salgado quickly assured the American that the robbery which had been committed upon him was unauthorized and would not be countenanced. He summoned the Indian who had committed the act before

him and threatened him with summary punishment if he did not immediately deliver the set of teeth to the American. It was with no evidence of reluctance that the bandit complied with his chief's demand.

"Oh, well," he said as he shrugged his shoulders in evidence of disgust, "I don't know that I could ever find any use for these teeth. I have already tried to fit them in the mouth of my grandmother, and my grandfather and two or three other old people, and none of them could use them; so the Americano may have them back."

Miller put the teeth through a disinfecting process and after enjoying a hearty meal took his train back to the City of Mexico.

Judge Sentenced Dog to Death.

From the Cincinnati Times-Star. "It is almost as hard for me to sentence that dog to death as it is to sentence a fellow being to serve punishment, but I must do it," said Judge Fricke in police court to John Brennan, who owned a fine black and white dog.

The dog followed a woman to a butcher shop. It supposed she and some meat in her hand and leaped on her, his fangs tearing the skin of her arm. The woman had Brennan arrested and Judge Fricke ordered the dog brought to court. There the canine made friends of every one. But he had gone beyond the bounds of dog law. Brennan's eyes glistened as he walked from the court room. "How am I going to tell the children that the dog is dead?" he asked.